REMARKS

Claims 1, 8, 9, 18 and 29 have been amended. Claims 13, 30 and 31 have been canceled. No new matter has been added. Upon entry of this amendment, claims 1-5, 8-12, 14-16, 18-20, 28 and 29 will be pending in this application.

Claims 1-5, 8, 18, 19, 20 and 30 are rejected under 35 USC 103(a) on Yamamoto (US 2003/0121685 or US 7,007,762) in view of Ookawa (US 5,796,226). Claims 9, 10, 13-16 and 31 are rejected under 35 USC 103(a) on Yamamoto in view of Kaplan (US 6,819,008). These rejections are respectfully traversed with respect to the claims as amended.

Claim 1 recites a controller configured to apply a predetermined angle correction factor to a portion of a predetermined advance angle profile that covers a range of different rotor speeds. Claim 9 recites a method including producing an angle correction factor for a portion of an advance angle profile that covers a range of different rotor speeds. Claims 8 and 18-20 incorporate the limitations of claim 1. Claim 16 incorporates the limitations of claim 9.

Claims 1 and 9 have been amended to clarify that the claimed angle correction factor is distinct from the claimed advance angle profile, and that the claimed angle correction factor and the claimed advance angle profile are stored in controller memory. Support for these amendments can be found in at least page 8, lines 5-7 and 17-18, of the specification. None of the cited references disclose or suggest the claimed combination of features.

In particular, Yamamoto discloses an advance angle map that defines an advance angle profile and is stored by a controller. However, the controller of Yamamoto does not store a correction factor distinct from the stored advance angle profile. The controller of Yamamoto does not apply such a correction factor to any portion of the advance angle profile stored by the map. Nor does the controller of Yamamoto produce such a correction factor for any portion of the advance angle profile stored by the map. Rather, the controller of Yamamoto simply selects from the map an advance angle without correcting the selected angle. See Yamamoto, paras [0047] and [0048].

The deficiencies of Yamamoto are not compensated for by the additional cited references of Ookawa and Kaplan. The controller of Ookawa does not store a correction factor distinct from a stored angle profile. Rather, the controller of Ookawa either stores a map defining turn-off angles that have already been corrected (see Ookawa, col. 24, lines 10-14), or stores a map of standard turn-off angles that are corrected on-the-fly using the equations provided at col. 16, lines 11 and 16 (see Ookawa, col. 24, lines 14-21). Similarly, the controller of Kaplan does not store a correction factor distinct from a stored angle profile. Rather, the controller of Kaplan stores a map of turn-on and conduction angles that are corrected on-the-fly using a feedback loop (see Kaplan, col. 8, line 19 to col. 9, line 5).

With the claimed invention, a stored advance angle profile and a stored angle correction factor distinct from the advance angle profile enables a controller to quickly and cost-effectively compensate for tolerances in each motor coming off an assembly line. For example, by storing in each motor off the line a common map defining an advance angle profile and a single correction factor that is produced specifically for that motor, the motor controller can apply the single custom correction factor to the common map over a range of rotor speeds for that motor. As further exemplified in FIG. 5 of the specification, a single correction factor can be applied to advance angles 13 and 14 of a common advance angle profile over the portion of the advance angle profile above 60,000 RPM. The applied correction factor produces corrected advance angles 16 and 17. Consequently, the performance of the motors can be improved in manner that is quicker and cheaper than employing high-precision manufacturing such that the tolerances are relatively tight, generating a full map customized to each motor or adjusting the control map on the fly as disclosed by the cited references.

Accordingly, because the cited references do not disclose or suggest all of the elements required by claims 1, 8, 9, 16 and 18-20, the rejection under 35 USC 103 of claims 1, 8, 9, 16 and 18-20 and the claims depending thereon should be withdrawn.

In view of the above, early action allowing claims 1-5, 8-12, 14-16, 18-20, 28 and 29 is solicited.

In the event the Patent and Trademark Office determines that an extension and/or other relief is required, Applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 424662013300.

Dated: April 9, 2010

Respectfully submitted,

By Bradley J. Meier

Bradley J. Meier
Registration No.: 44,236
MORRISON & FOERSTER LLP
1650 Tysons Blvd, Suite 400
McLean, Virginia 22102
(703) 760-7700